

IN THE ABSTRACT:

Please cancel the current abstract and insert the following.

~~A projection exposure apparatus includes an illumination system, a projection optical system for projecting a pattern on a substrate, a holding portion for holding a first mask having a first transmission portion between the illumination system and the projection optical system, a second mask which is arranged near the image-side focal position of the projection optical system and has a second transmission portion, and an actuator for driving the second mask in a plane perpendicular to the optical axis of the projection optical system. The projection exposure apparatus further includes a measurement device for measuring a change in intensity of light which is emitted by the illumination system and passes through the first transmission portion, the projection optical system, and the second transmission portion while the actuator drives the second mask, and an arithmetic device for calculating the wavefront aberration of the projection optical system on the basis of the measurement result of the measurement device.~~

-- A projection exposure apparatus includes a projection optical system arranged to project a pattern onto a substrate, a holding portion arranged to hold an optical element which propagates light toward the projection optical system, a mask having a transmission portion and being disposed on or near an image plane or object plane of the projection optical system or a plane conjugate to the image plane and the object plane, an actuator arranged to drive the mask along a plane of an image of the optical element formed by the projection optical system, and a measurement device arranged to measure an intensity of light while the mask is driven. The light

emerges from the optical element, and passes through the projection optical system and the transmission portion of the mask. The measurement device includes a measurement surface positioned at a plane conjugate to a pupil plane of the projection optical system or a plane spaced apart from the mask enough to separately detect respective rays emerging from plural points of the pupil plane and passing through the transmission portion. --